Prevalence of and risk factors for overweight and obesity among adolescents in Morocco

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Abstract

Background: Overweight and obesity among children and adolescents is a major public health concern and their prevalence is increasing worldwide at an alarming rate in both developing and developed countries.

Aims: The objective of this study was to assess the prevalence of overweight and obesity in a representative sample of 12–18-year-old schooled adolescents in Fez, Morocco, and to investigate the possible risk factors associated with adolescent obesity.

Methods: A cross-sectional study was conducted between September 2014 and March 2015 in public secondary schools. Data were collected from a questionnaire. Weight and height were measured, and body mass index was calculated. Weight was classified according to the reference curves of WHO (2007). Data on 1818 adolescents aged 12–18 years were used.

Results: The prevalence of overweight was 7.69% and that of obesity was 3.41%. Overweight and obesity in adolescents were positively correlated to having a father (odds ratio (OR) = 1.58, P = 0.008) or a mother with higher education (OR = 1.56, P = 0.009). High family income (OR = 2.115, P = 0.028), motorized transport to school (adjusted OR = 1.77, P = 0.017), using a computer for > 4 h/day (OR: 2.56, P = 0.004) and frequent consumption of soda and soft drinks (OR = 1.42, P = 0.04) were also correlated with an increased risk for overweight and obesity.

Conclusions: This study provides useful findings that could be elaborated on and expanded in studies on overweight and obesity among adolescents in Morocco.

Keywords: Obesity, adolescents, nutrition, diet, Morocco.

Introduction

Obesity and overweight constitute a major public health problem, and their prevalence is increasing worldwide at an alarming rate in both developing and developed countries (1). WHO has described obesity as the worst non-infectious epidemic in history (1). During the past two decades, the prevalence of overweight and obesity in many developed and developing countries has also increased rapidly in children, largely due to growing urbanization and nutrition transitions (2). The nutrition transition is generally associated with increased consumption of energy-dense foods that are low in fibre and high in sugar and of sweetened drinks as well as a decrease in physical activity and a more sedentary lifestyle (3).

Obesity is potentially serious because of its impact on the physical and psychological health of children and adolescents. It is strongly associated with numerous deleterious health issues (4). Metabolic complications associated with obesity in childhood greatly increase the risks for type 2 diabetes, hypertension, chronic inflammation and cardiovascular diseases (5). Many risk factors contribute to overweight and obesity, but they include genetic, biological, social and environmental factors, which affect weight gain through the mediators of energy intake and energy expenditure (6).

As in many other developing countries, Morocco is now facing the phenomenon of epidemiological transition (7). This has led to new health problems in the country, such as childhood overweight and obesity. The high burden of childhood obesity calls for rigorous investigations of its determinants, context-specific patterns and associated factors. The objective of this study was to assess the prevalence of overweight and obesity in a representative sample of 12–18-year-old schooled adolescents in the city of Fez, Morocco, and to investigate the possible associations with sociodemographic and lifestyle factors.

Methods

Study design and sample

Data from the Regional Academy for Education in Fez indicated that 151 974 adolescents were enrolled in secondary schools, 92% (139 812 students) of whom attended public schools and 8% (12 162 students) attended private schools. A cross-sectional study was conducted between September 2014 and March 2015.

The sample size was calculated from a sample proportion of overweight or obesity of 50%, with 95% confidence intervals (CIs) and a margin error of 0.03. The

sample proportion was assumed to be 0.50, which gave the maximum possible sample size required. The sample size was calculated from the formula:

$$n = N*X / (X + N - 1),$$

where $X = Z_{\alpha/2}^2 *p*(1-p) / MOE^2$, $Z_{\alpha/2}$ is the critical value of the normal distribution at $\alpha/2$ (e.g. for a confidence level of 95%, α is 0.05 and the critical value is 1.96), MOE is the margin of error, p is the sample proportion, and N is the population size (139 812 students). This method indicated that the required minimal sample size was 1060 adolescents. Additional students were included to account for missing data, and the final sample comprised 1818 adolescents randomly recruited from public secondary schools in Fez (909 boys and 909 girls aged 12–18 years) , who completed the questionnaire.

The secondary schools were selected to ensure representation of all the city districts. The city is divided into 12 districts and has a total of 95 secondary schools, and one secondary school was randomly selected from each district. Classes were then selected at each grade by a simple random method. In this way, one class was selected in each of the six grades (grades 1, 2, 3 for junior level and grades 4,5, 6 for senior level) in each secondary school. All classes were mixed (males and females), and all participants were healthy, with no physical disabilities.

Ethical permission to carry out the study was obtained from the Regional Academy for Education in Fez. Directors, teachers and students at the selected secondary schools were informed about the procedures and the purpose of the study. The field survey included anthropometric measurements and a questionnaire survey, which was administered to all participants. The questionnaires were completed anonymously to respect confidentiality.

Anthropometric measurements

Weight (kg) and height (cm) were measured, and body mass index (BMI) was calculated as weight in kilograms divided by height in metres squared (kg/m^2) for each adolescent. Corpulence was classified from the WHO reference curves (2007) for children aged 5–19 years (8).

Socioeconomic and lifestyle variables

The questionnaire used in this study was adapted from that of a previous study conducted in Morocco (9). Its validity was examined in a pilot study of 50 adolescents, which showed that it was acceptable and understandable. The questionnaire elicited information on demographic and socioeconomic variables, meal pattern, eating habits, physical activity and sedentary time.

Parents' education level was categorized into three groups. Parents who had never attended school or only primary school were considered to have a low educational level; medium level of education corresponded to secondary education (junior to senior high-school), and a high educational level corresponded to higher education and university. The monthly income of the family was used as a class variable in the following categories: low

socioeconomic level, a salary < 6000 Moroccan dirhams (MAD; 1 MAD = 0.09 €) per month; medium level, a salary of 6000–10 000 MAD per month; and high socioeconomic level, a salary > 10 000 MAD per month.

The survey included questions about the frequency of practising sports and other physical activity during a typical week. Sedentary time was assessed as time spent watching television (hours per day), use of a computer (hours per day) and the mode of transport to school (walking or motoring). The questionnaire also addressed sleep duration (h/day) and dietary behaviour, such as the number and regularity of daily meals, the frequency of eating between meals and the frequency of consumption of certain types of foods per week.

Statistical analysis

The data were analysed with Epi Info, version 7.1.3.3 software. Means and percentages were used for descriptive analyses. Unpaired comparisons were performed by Student's t test (mean values). For the purpose of the analysis, the adolescents were divided into those of normal weight and those who were overweight or obese. Differences in proportions between groups were investigated with the chi-squared test. $P < 0.05$ was considered statistically significant. Logistic regression was performed to assess the association between the factors of interest and overweight, including obesity. The association between overweight or obesity and the factors considered was determined by univariate analysis. Crude odds ratios (ORs) and 95% confidence intervals (CIs) were calculated to measure the strength of associations. To elucidate the relations among several variables, we conducted a multivariate analysis by logistic regression. Factors associated with inclusion at $\alpha < 20\%$ in univariate analyses were included in the initial multivariate logistic model with additional factors reported to be associated with overweight and obesity in previous studies. The level of significance in multivariate analyses was set at $P < 0.05$.

Results

We included 1818 adolescents (909 girls and 909 boys) with mean ages of 16.03 ± 1.67 years for boys and 15.58 ± 1.68 years for girls. Table 1 shows the main anthropometric characteristics of the sample. No significant differences were found between boys and girls in age, weight, height or BMI. The distribution of corpulence according to BMI is shown in Table 2. Overall, the prevalence of underweight was 3.05%, that of overweight was 7.69%, and that of obesity was 3.41%. More boys were underweight (3.96%) than girls (2.1%), and the difference was statistically significant ($P = 0.028$). The prevalence of overweight was 8.25% for girls and 7.15% for boys, but the difference was not statistically significant ($P = 0.37$). The prevalence of obesity was higher among girls (3.96%) than boys (2.86%), but, again, the difference was not significant ($P = 0.19$).

Table 3 shows the distribution of normal, overweight and obese adolescents in relation to socioeconomic and lifestyle variables. We found a statistically significant

Table 1 Anthropometrics of the study sample

	Boys (n = 909)		Girls (n = 909)		P
	Mean	SD	Mean	SD	
Age (years)	16.03	1.67	15.58	1.68	> 0.05
Weight (kg)	56.34	9.80	53.37	8.90	> 0.05
Height (m)	1.66	0.09	1.60	0.07	> 0.05
BMI (kg/m²)	20.11	2.47	20.61	2.82	> 0.05

BMI, body mass index; SD, standard deviation
P for t test

Table 2 Distribution of corpulence according to BMI

Corpulence	Boys (n = 909)		Girls (n = 909)		Total (1818)		P
	n	%	n	%	n	%	
Underweight	36	3.96	19	2.1	55	3.03	0.028*
Normal weight	782	86.02	779	85.69	1561	85.86	0.83
Overweight	65	7.15	75	8.25	140	7.69	0.37
Obese	26	2.86	36	3.96	62	3.41	0.19
Overweight and obese	91	10.01	111	12.21	202	11.11	0.13

P for χ² test
* Significant

relation between family income, reported by 1763 adolescents (55 missing values), and the weight of adolescents (P = 0.004), the prevalence of overweight and obesity increasing with increasing family income. The prevalence of overweight and obesity also increased significantly with the level of education of the father (14.69% for high and 8.91% for low education; P = 0.004) and the mother (18.42% for high and 9.33% for low; P = 0.001).

The frequency of overweight and obesity further increased with the number of hours per day spent watching television, although the relation was not significant (P = 0.32). Time spent using a computer was, however, statistically significantly related to the prevalence of overweight and obesity, the prevalence being higher in adolescents who spent more than 4 h/day using a computer than in those who spent < 1 h/day (or a few times a week) (P = 0.003). No significant association was found between the daily duration of sleep and risk for overweight or obesity (P = 0.75).

We found no statistically significant relation between the prevalence of overweight and obesity and practice of sport at school (P = 0.56), although the prevalence of overweight was lower among adolescents who practised physical activity outside school every week (P = 0.02). The prevalence of overweight and obesity was higher among adolescents who went to school in motor vehicles than among those who walked to school (P = 0.001).

The eating habits of normal and overweight adolescents are shown in Table 4. No statistically significant associations were found between adolescents who were overweight and and those of normal weight who ate breakfast regularly (P = 0.87), ate lunch regularly

(P = 0.46), ate dinner regularly (P = 0.14) or ate between meals (P = 0.88). A statistically significant relation was seen between the prevalence of overweight and the frequency of consumption of soda and soft drinks (P = 0.03).

Similarly, in the multivariate logistic regression analysis (Table 5), overweight and obesity in adolescents were significantly associated with higher education of both the father (adjusted OR = 1.58; 95% CI, 1.13–2.21; P = 0.008) and the mother (adjusted OR = 1.56; 95% CI, 1.11–2.18; P = 0.009); family income (2.12, 1.08–4.14; P = 0.028); transport to school in a motor vehicle (1.77, 1.10–2.82; P = 0.017); use of a computer for > 4 h/day (2.56, 95% CI, 1.33–4.93; P = 0.004); and drinking soda and soft drinks three or more times a week (1.42, 1.01–1.98; P = 0.04).

Discussion

In this study, the prevalence of overweight was 7.29% and that of obesity was 3.41%. This result is consistent with those of surveys in other Moroccan cities (10,11). The prevalence of overweight and obesity among schoolchildren aged 7–14 years in Rabat were 5.1% and 3.7%, respectively (10), and Kaoutar et al. (2013) in Marrakech reported a prevalence of overweight and obesity of 9.1% in a sample of 1407 schooled adolescents aged 12–18 years (11). Studies in other countries of the Maghreb found similar or higher rates. In Tunisia, the prevalence of overweight and obesity among adolescents aged 15–19 years was estimated to be 15% and 2.6%, respectively (12). In Algeria, the prevalence was higher, one study showing a prevalence of 5.26% for overweight and 18.64% for obesity among children aged 6–12 years (13). The differences between countries of the Maghreb might be due to differences in period, gender, the targeted age groups and methods (14, 15).

Table 3 Numbers and percentages of normal and overweight or obese adolescents according to socioeconomic and lifestyle variables

	Normal weight		Overweight or obese		Total		P
	n	%	n	%	N	%	
Gender							
Boys	782	89.57	91	10.43	873	100	0.18
Girls	779	87.52	111	12.48	890	100	
Total	1561	88.54	202	11.46	1763	100	
Average family income (MAD/month)							
Low (≤ 6000)	1402	89.07	172	10.93	1574	100	0.004*
Medium (6000–10 000)	85	83.33	17	16.67	102	100	
High (≥ 10 000)	42	76.36	13	23.64	55	100	
Not reported	32	100	0	0	32	100	
Total	1561	88.54	202	11.46	1763	100	
Father's education level							
Low	859	91.09	84	8.91	943	100	0.004*
Medium	458	85.77	76	14.23	534	100	
High	244	85.31	42	14.69	286	100	
Total	1561	88.54	202	11.46	1763	100	
Mother's education level							
Low	1127	90.66	116	9.34	1243	100	0.001*
Medium	341	83.99	65	16.01	406	100	
High	93	81.58	21	18.42	114	100	
Total	1561	88.54	202	11.46	1763	100	
Television viewing (h/day)							
≤ 1	511	90.45	54	9.55	565	100	0.32
1–2	665	88.21	89	11.80	754	100	
2–4	235	87.36	34	12.64	269	100	
≥ 4	150	85.71	25	14.29	175	100	
Total	1561	88.54	202	11.46	1763	100	
Use of computer (h/day)							
A few times a week	167	91.98	15	8.02	182	100	0.003*
≤ 1	556	92.52	47	7.48	603	100	
1–2	455	87.19	68	12.81	523	100	
2–4	226	86.18	38	13.82	264	100	
≥ 4	157	82.74	34	17.26	191	100	
Total	1561	88.54	202	11.46	1763	100	
Sleep duration (h/day)							
< 8	574	89.31	71	10.69	645	100	0.75
9–10	376	87.93	53	12.07	429	100	
> 10	611	89.09	78	10.91	689	100	
Total	1561	88.54	202	11.46	1763	100	
Practise sports at school							
Yes	1523	88.82	198	11.18	1721	100	0.56
No	38	91.49	4	8.51	42	100	
Total	1561	88.54	202	11.46	1763	100	
Practice of sport outside school							
Yes	524	90.97	52	9.03	576	100	0.02*
No	1037	87.36	150	12.64	1187	100	
Total	1561	88.54	202	11.46	1763	100	
Mode of transport to school							
Walking	1431	89.32	171	10.68	1602	100	0.001*
Motor vehicle	130	80.74	31	19.26	161	100	
Total	1561	88.54	202	11.46	1763	100	

MAD, Moroccan dirham

P for χ² test

*Significant

Table 4 Numbers and percentages of normal and overweight or obese adolescents according to dietary behaviour

Dietary behaviour	Normal weight		Overweight or obese		Total		P
	n	%	n	%	n	%	
Eat breakfast regularly each day							
Yes	1141	88.66	146	11.34	476	100	0.87
No	420	88.24	56	11.76	1287	100	
Total	1561	88.54	202	11.46	1763	100	
Eat lunch regularly each day							
Yes	1511	88.67	193	11.33	1704	100	0.46
No	50	8.75	9	15.25	59	100	
Total	1561	88.54	202	11.46	1763	100	
Eat dinner regularly each day							
Yes	1021	87.71	143	12.29	1164	100	0.14
No	540	90.15	59	9.85	599	100	
Total	1561	88.54	202	11.46	1763	100	
Eat between meals							
Yes	940	88.68	120	11.32	1060	100	0.88
No	621	88.34	82	11.66	703	100	
Total	1561	88.54	202	11.46	1763	100	
Fruit consumption (days/week)							
< 3	829	86.99	124	12.94	953	100	0,06
≥ 3	732	90.37	78	10.04	810	100	
Total	1561	88.54	202	11.46	1763	100	
Vegetable consumption (days/week)							
< 3	277	85.76	46	14.24	323	100	0.12
≥ 3	1284	89.17	156	10.83	1440	100	
Total	1561	88.54	202	11.46	1763	100	
Milk and dairy product consumption (days/week)							
< 3	917	89.73	105	10.27	1022	100	0.07
≥ 3	644	86.91	97	13.09	741	100	
Total	1561	88.54	202	11.46	1763	100	
Soda and soft drink consumption (days/week)							
< 3	1202	89.51	141	10.49	1343	100	0.03*
≥ 3	359	85.47	61	14.53	420	100	
Total	1561	88.54	202	11.46	1763	100	
Sweets and chocolate consumption (days/week)							
< 3	1310	88.87	164	11.13	1474	100	0.37
≥ 3	251	86.85	38	13.15	289	100	
Total	1561	88.54	202	11.46	1763	100	
Cake, pastry, biscuit consumption (days/week)							
< 3	1313	89.38	156	10.62	1469	100	0.07
≥ 3	248	84.36	46	15.64	294	100	
Total	1561	88.54	202	11.46	1763	100	

Elsewhere, the prevalence of overweight and obesity also varies considerably. In studies conducted in Middle East countries, the rates of overweight were higher than in our study. For instance, the prevalence of overweight and obesity among Kuwaiti elementary schoolchildren was 20.2% and 16.8%, respectively (16). The prevalence of overweight is much higher in developed countries. In the United Kingdom, for example, the prevalence was 23.6% among boys and 27.9% among girls (17), and, in the USA, the prevalence was estimated to be 35.3% for boys and 34.1% for girls (18). These results are difficult to compare because of the differences in the reference

Table 5 Results of logistic regression: adjusted odds ratios (aORs) and 95% confidence intervals (95% CIs) for the risk of overweight (including obesity) in relation to selected factors

Risk factor	Category	Reference	aOR	95% CI	P
Gender	Boy	Girl	0.922	0.683–1.246	0.607
Education of father	Medium	Low	1.285	0.846–1.952	0.283
	High		1.576*	1.125–2.208	0.008
Education of mother	Medium	Low	1.553	0.908–2.654	0.107
	High		1.556*	0.112–2.179	0.009
Average family income (MAD/month)	6000–10 000	≤ 6000	1.374	0.784–2.406	0.266
	≥ 10 000		2.115*	1.081–4.138	0.028
Computer use (h/day)	≤ 1	A few times a week	0.925	0.501–1.708	0.804
	1–2		1.527	0.843–2.766	0.162
	2–4		1.729	0.913–3.276	0.092
	≥ 4		2.561*	1.331–4.931	0.004
Practise sport outside school	Yes	No	0.682	0.458–1.016	0.064
Mode of transport to school	Motor vehicle	Walking	1.765*	1.104–2.821	0.017
Television viewing (h/day)	1–2	≤ 1	1.255	0.878–0.795	0.211
	2–4		1.363	0.864–0.152	0.182
	≥ 4		1.569	0.943–2.607	0.082
Sleep duration (h/day)	9–10	< 8	1.034	0.735–1.454	0.847
	> 10		1.145	0.784–1.673	0.428
Regular breakfast intake per day	Yes	No	0.919	0.675–1.284	0.622
Eat between meals every day	Yes	No	1.072	0.789–1.457	0.653
Soda and soft drinks intake (days/week)	≥ 3	< 3	1.415*	1.014–1.975	0.041

MAD, Moroccan dirham

*P: significance

ªOR: odds ratio adjusted in multivariate regression model for each independent factors

values used to classify weight, sample size, age group and sociodemographic and genetic factors.

We found a significant relation between family income and overweight in adolescents, the prevalence of overweight and obesity increasing with higher family income. A similar finding was reported in a study of Moroccan adults, in which family income, used as a determinant of socioeconomic status, was strongly associated with overweight and obesity (19), and the study in Tunisia indicated a link between living in household of a high socioeconomic level and overweight among adolescents (12). The literature is, however, contradictory, with some studies reporting that obesity is more prevalent among people of low socioeconomic status (20) and others showing the opposite (21,22). Studies in developed countries in particular indicate excess weight among children in families of lower socioeconomic status (23), while in studies in developing countries excess weight is found predominantly among children and adolescents in families of higher socioeconomic status (24). Several explanations have been proposed. The low prevalence of obesity in groups of low socioeconomic status in developing countries is related to food scarcity, patterns of high energy expenditure and the greater capacity of the elite to obtain adequate food supplies (25). The inverse correlations reported in some studies may be due to the benefits of economic growth, notably better access to food and high energy expenditure by poorer

social groups, difficulty in acquiring more expensive, less energy-dense foods and a trend towards less leisure time and fewer opportunities for exercise (26).

Another important risk factor of adolescents for overweight and obesity was having parents with a high educational level, in accordance with other studies (22, 27–29); however, studies in developed countries found that obesity was more strongly related to lower parental education (30,31). Our finding is related to the association between high parental educational level and occupation and consequently to higher socioeconomic status; therefore, their children have access to high-energy foods, such as fast foods, increasing their risk for obesity.

Watching television daily for ≥ 4 h was not associated with overweight or obesity in our study, although a previous study found a significant positive correlation with the risk of adolescents for overweight (32). We did find a statistically significant correlation between the prevalence of overweight and obesity and the number of hours spent using a computer, consistent with the findings of studies in Brazil and Portugal (33,34). Media use may reduce energy expenditure by replacing physical activity and also increase snacking, which is further encouraged by advertisements for energy-dense foods (35).

Practising sports at school was not significantly associated with overweight and obesity; however, the majority of the participants participated in school sports,

so the association would be difficult to identify. In our sample, practising sports outside schools was also not significantly associated with overweight and obesity. Other studies have shown the opposite. For instance, a study in Saudi Arabia showed that intense physical activity was inversely associated with adolescent obesity (*36*), and a strong negative association was reported between vigorous physical activity and total and central body fat in Spanish adolescents (*37*). Inadequate physical activity has been hypothesized to be an important contributing factor to the development of childhood obesity. A review of the influence of physical activity on adiposity among 5–18-year-olds showed that adiposity was reduced and aerobic capacity increased with more time spent in intense physical activity (*38*). Our finding that the mode of transport to school was associated with overweight and obesity is similar to those of other studies (*33,39*). Walking has been shown to be beneficial to health and weight control, while motorized vehicle use is associated with overweight and other disorders (*40*).

Overweight and obesity were significantly associated with a high frequency of drinking soda and soft drinks, in line with previous studies. For instance, the consumption of carbonated soft drinks was associated with obesity in Mexican–American children (*41*), and BMI was positively correlated with consumption of sugar-sweetened carbonated beverages in boys in Saudi Arabia (*42*).

Our findings should be interpreted in the light of the potential limitations of the study. The risk factors for overweight and obesity were identified from self-reported data, which could be biased by socially desirable reporting, even though students were encouraged to be honest by assuring them that their responses were anonymous and confidential. Furthermore, the results reflect only the situation of adolescents attending public high schools in a city. It would be important also to study private high schools, in which most of the students belong to upper socioeconomic classes.

Conclusion

This study provides useful findings that could be elaborated and expanded in future studies on overweight and obesity among adolescents in Morocco. Primary prevention of obesity should be a national public health priority in our country. Initiatives to combat overweight and obesity among children and adolescents must include monitoring of nutritional status at both the individual and the collective level, and strategies for the prevention, diagnosis and early treatment of overweight and obesity should be introduced before the problem spreads more widely.

Prévalence et facteurs de risque du surpoids et de l'obésité parmi les adolescents au Maroc

Résumé

Contexte : Le surpoids et l'obésité chez l'enfant et l'adolescent représentent une préoccupation de santé publique majeure et leur prévalence est en augmentation de manière alarmante dans les pays industrialisés et les pays en développement.

Objectif : La présente étude avait pour objectif d'évaluer la prévalence du surpoids et de l'obésité dans un échantillon représentatif d'adolescents scolarisés âgés de 12 à 18 ans à Fès, au Maroc, et d'examiner les facteurs de risque potentiels associés à l'obésité des adolescents.

Méthodes : Une étude transversale a été menée entre septembre 2014 et mars 2015 dans des établissements d'enseignement secondaire publics. Des données ont été collectées au moyen d'un questionnaire. Le poids et la taille ont été mesurés, et l'indice de masse corporelle a été calculé. Le poids a été classé selon les courbes de référence de l'OMS (2007). Les données relatives à 1818 adolescents âgés de 12 à 18 ans ont été utilisées.

Résultats : La prévalence du surpoids était de 7,69 % et celle de l'obésité de 3,41 %. Le surpoids et l'obésité chez les adolescents avaient une corrélation positive avec le niveau d'éducation supérieur du père (odds ratio (OR) = 1,58, *p* = 0,008) ou de la mère (OR = 1,56, *p* = 0,009). Un revenu familial élevé (OR = 2,115, *p* = 0,028), un transport scolaire motorisé (OR ajusté = 1,77, *p* = 0,017), l'utilisation d'un ordinateur plus de quatre heures par jour (OR = 2,56, *p* = 0,004) et la consommation régulière de sodas et de boissons gazeuses (OR = 1,42, *p* = 0,04) étaient également corrélés à une augmentation du risque de surpoids et d'obésité.

Conclusion : La présente étude a fourni des résultats utiles qui pourront être approfondis et étendus à d'autres études sur le surpoids et l'obésité parmi les adolescents au Maroc.

انتشار فرط الوزن والسِمنة وعوامل الخطر المسببة لهما بين المراهقين في المغرب

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الخلاصة

الخلفية: يشكل فرط الوزن والسمنة بين الأطفال والمراهقين شاغلاً رئيسياً من شواغل الصحة العامة ويتزايد انتشاره في جميع أنحاء العالم بمعدل ينذر بالخطر في كل من البلدان النامية والمتقدمة.

الهدف: كان الهدف من هذه الدراسة هو تقييم مدى انتشار فرط الوزن والسمنة في عينة تمثّل المراهقين في المدارس الذين تتراوح أعمارهم بين ١٢ و١٨ سنة في مدينة فاس بالمغرب، واستقصاء عوامل الخطر المحتملة المرتبطة بالسمنة لدى المراهقين.

طرق البحث: أجرِيَت دراسة مقطعية بين أيلول/ سبتمبر ٢٠١٤ وآذار/ مارس ٢٠١٥ في المدارس الثانوية العامة، وجُمِعَت البيانات عن طريق استبيان. وقِيس الوزن والطول، وحُسِب مؤشر كتلة الجسم. وصُنِّفَ الوزن بحسب المنحنيات المرجعية لمنظمة الصحة العَالمية (٢٠٠٧). وحُلِّلَت بيانات ١٨١٨ مراهقاً تتراوح أعمارهم بين ١٢ و١٨ سنة.

النتائج: بلغ معدل انتشار فرط الوزن ٦٩, ٧٪ ومعدل انتشار السمنة ٤١, ٣٪. وارتبطت زيادة الوزن والسمنة لدى المراهقين ارتباطاً إيجابياً بوجود أب متعلم تعليماً عالِيًا (نسبة الأرجحية = ٥٨, ١، P= ٠٠٨, ٠) أو أم متعلمة تعليماً عالِيًا (نسبة الأرجحية = ٥٦, ١، P=٠٠٩, ٠). وارتبط أيضًا بزيادة خطر الإصابة بفرط الوزن والسمنة كل من دخل الأسرة المرتفع (نسبة الأرجحية = ١١٥, ٢، P=٠٢٨, ٠)، والذهاب إلى المدرسة بالمركبات (نسبة الأرجحية المصححة = ٧٧, ١، P=٠١٧, ٠)، والجلوس على الكمبيوتر لأكثر من ٤ ساعات يوميًا (نسبة الأرجحية= ٥٦, ٢، P=٠٠٤, ٠)، وكثرة استهلاك الصودا والمشروبات الغازية (نسبة الأرجحية= ٤٢, ١، P=٠٤, ٠).

الاستنتاجات: تقدم هذه الدراسة نتائج مفيدة يمكن التعمق فيها وتوسيع نطاقها في الدراسات المتعلقة بفرط الوزن والسمنة بين المراهقين في المغرب.

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